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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/646,204	12/21/2000	Helena Seppanen	09910-007001	5981

7590

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EXAMINER

DO, PENSEE T

ART UNIT

PAPER NUMBER

1641

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/646,204

Applicant(s)

SEPPANEN ET AL.

Examiner

Pensee T. Do

Art Unit

1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Response to Amendment***

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn due to an error that the 103 rejection by Czerlinski and Smith should have been applied to claim 11 (now cancelled and incorporated in claims 1, 13 and 14).

### ***Amendment Entry & Claim Status***

The after-final amendment filed on November 22, 2004 has been acknowledged and entered.

Claims 1-10, 12-26 are pending.

### ***Withdrawn Rejection(s)***

Rejection under 35 USC 103(a) by Czerlinski in view of Smith in the previous office action is withdrawn herein.

### ***Newgrounds of Rejection(s)***

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1-6, 9, 13, 14, 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Czerlinski (US 4, 454,234) further in view of Smith et al. (US 4,272,510).

Czerlinski teaches a method for separating magnetic particles. The rabbit anti-BSA antibodies, a given quantity (50 to 100 ul of BSA per 10 ml tube) of BSA-coated magnetic particles are added to a series of tubes. To each tube, a surface tension releasing agent such as a protein of rabbit antiserum diluted in PBS containing 2% (v/v) of normal sheep serum and 0.05% Tween 20 is added. The magnetic particles are collected with a magnet, washed with 4 ml of PBS containing 0.05% Tween 20. They are collected and resuspended a total of three times. (see example 3). Czerlinski teaches the microparticles having average diameter no greater than 1 micron. (see col. 3, lines 57-62).

However, Czerlinski fails to teach using a magnetic probe to collect the magnetic particles and transfer them to a second medium.

Smith has been discussed previously (or see rejection below).

It would have been obvious to one of ordinary skills in the art to use the magnetic separation device of Smith for the magnetic separation step in Czerlinski's method because such as device would accelerate the collection of the magnetic particles and thus would accelerate the speed of the separation step so that results would be obtained at a faster rate since the method of Czerlinski requires that the magnetic particles must be collected and resuspended a total of three times. Regarding the

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concentration of the tenside, one of ordinary skills in the art would be able to arrive at a suitable range through routine experimentation.

***Maintained Rejection(s)***

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 7-10, 12-17, 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins (US 5,705,628) further in view of Smith et al. (US 4,272,510).

Hawkins teaches a method of DNA purification and isolation using magnetic particles. The method comprises of incubating single stranded DNA and magnetic particles in a microtiter plate; Add 100 ul of binding buffer (20% PEG 8000 and 2.5 M NaCl) which corresponds to the surface tension releasing agent in the present invention and mix; magnetically separate the particles and remove the DNA to a new microtiter plate. The magnetic particles used were the carboxyl coated magnetic microparticles, which were 1 um in diameter. (see col. 9, lines 20-30; example 4).

However, Hawkins fails to teach using a magnetic probe to separate the magnetic particles from the mixture and transferring the magnetic particles to the next medium.

Smith et al. teaches means for applying magnetic force to move antigen-antibody coated solid phase units from one place to another, i.e. from a predisposed reaction mixture to reaction mixture, into and out of large volumes of rinsing fluids and finally to test tubes or vials which are to be inserted into a gamma counter. The solid phase unit comprises a core of ferrous metal (core of magnetic material).

It would have been obvious to one of ordinary skills in the art to use the magnetic separation device of Smith et al. to separate bound magnetic particles in the method of Hawkins because Hawkins suggests magnetic separation step and transferring the magnetic particles to a second medium/vessel. By using the magnetic separation means of Smith, the magnetic separation step of Hawkins' method would be carried out at a faster pace thus would save much time and effort and the particles can be transferred to as many vessels as possible. Also, by using such combination, a large number of solid phases units (particles) can be separated simultaneously under extreme uniform conditions, so as to yield highly reproducible results in solid phase assays with large numbers of specimen. Regarding the concentration the magnetic particles, it would have been obvious to one of ordinary skill in the art to adjust such concentration to execute optimum binding between the magnetic particle and the target analyte.

### ***Response to Arguments***

Applicant's arguments filed on November 22, 2004 have been fully considered but they are not persuasive.

Regarding the particle size, Applicants reason that since Smith uses larger particles having diameter range from about 0.1 mm to about 2.0 cm, the relatively heavy macroscopic particles will tend to fall readily to the bottom, while microscopic particles move freely to form suspensions such that separation with a magnetic probe would be quite different. Applicants further argue that as particles become smaller, they behave more like molecules and are more easily dispersed as a suspension. As a result, in practice, it is more difficult to magnetically attract small particles, particularly as in Smith where the magnetic probe is only inserted into a receptacle and not moved about in the receptacle.

Since the magnetic probe in Smith can attract much larger particles that are at the bottom of the vessel, there would not be any problem attracting smaller particles, which move freely to form suspension in the vessel. Rather, the magnetic probe of Smith must have stronger magnetic strength in order to attract large particles. Thus, with such strong magnetic strength when used to attract the smaller particles such as those in Hawkins, the magnetic probe would attract all the magnetic particles in the medium and thus all the target substance would be transferred. Since Smith uses a probe to attract larger magnetic particles, the magnetic strength of the probe must be very strong in order to attract these heavy magnetic particles. Thus, if the magnetic strength is strong enough, then it would be able to attract the disperse micromagnetic particles in Hawkins. Thus, magnetic particles size plays no role in the functioning of the magnetic probe. Furthermore, since the magnetic probe of Smith is no different from that of the invention, it can perform the same functions as the probe of the present

invention. Thus, if the probe of the present invention is not required to move about in the receptacle while it still attracts magnetic particles of smaller size, then so does the probe of Smith.

Applicants further submit that neither Hawkins nor Smith recognizes that a surface tension releasing agent can increase the adherence of the magnetic microparticles to the probe, which Applicants recognized can enhance separation by allowing the particles to be removed as completely as possible.

Since Hawkins teaches adding a binding buffer (20% PEG 8000 and 2.5 M NaCl) which corresponds to the surface tension releasing agent of the present invention, such teaching satisfies the requirement of the claimed invention. If the binding buffer of Hawkins is the same as that of the surface tension releasing agent of the present invention, then it must possess the same characteristics of those claimed by the present invention, i.e. enhancing separation by allowing particles to be removed as completely as possible.

Applicants submit that there is no indication in Hawkins or Smith that one technique is faster than the other as suggested by the Examiner that Smith's technique allows the separation to be performed at a faster pace.

Smith's technique allows separation to be performed at a faster pace because of the use of the probe.

### ***Conclusion***

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pensee T. Do whose telephone number is 571-272-0819. The examiner can normally be reached on Monday-Friday, 7:00-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Pensee T. Do  
Patent Examiner  
January 5, 2005



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1/10/05